



SEQUENCE LISTING

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<120> BACTERIORHODOPSIN/G PROTEIN-COUPLED RECEPTOR CHIMERAS

<130> 096429-9146

<140> 10/688,221

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<150> US 09/389,835

<151> 1999-09-03

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<151> 1998-09-03

<160> 53

<170> Word 97 (DOS text file)

<210> 1

<211> 1626

<212> DNA

<213> Halobacterium salinarium

<220>

<221> CDS

<222> (394) .. (1182)

<400> 1

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tcacgacagg agccgaccag cgacacccag aaggtgcgaa cggttgagtg ccgcaacgat 120

cacgagtttt tcgtgcgctt cgagtggtaa cacgcgtgca cgcacgact tcaccgcggg 180

tgtttcgacg ccagccggcc gttgaaccag caggcagcgg gcatttcaca gccgctgtgg 240

cccacacact cggtggggtg cgctattttg gtatggtttg gaatccgcgt gtcggctccg 300

tgtctgacgg ttcacgggtc taaattccgt cacgagcgta ccatactgat tgggtcgtag 360

agttacacac atatcctcgt taggtactgt tgc atg ttg gag tta ttg cca aca 414

Met Leu Glu Leu Leu Pro Thr

1

5

gca gtg gag ggg gta tcg cag gcc cag atc acc gga cgt ccg gag tgg 462

Ala Val Glu Gly Val Ser Gln Ala Gln Ile Thr Gly Arg Pro Glu Trp

10

15

20

atc tgg cta gcg ctc ggt acg gcg cta atg gga ctc ggg acg ctc tat 510

Ile Trp Leu Ala Leu Gly Thr Ala Leu Met Gly Leu Gly Thr Leu Tyr

25

30

35

ttc ctc gtg aaa ggg atg ggc gtc tcg gac cca gat gca aag aaa ttc 558

Phe Leu Val Lys Gly Met Gly Val Ser Asp Pro Asp Ala Lys Lys Phe

40

45

50

55

tac gcc atc acg acg ctc gtc cca gcc atc gcg ttc acg atg tac ctc 606

Tyr Ala Ile Thr Thr Leu Val Pro Ala Ile Ala Phe Thr Met Tyr Leu

60

65

70

tcg atg ctg ctg ggg tat ggc ctc aca atg gta ccg ttc ggt ggg gag 654

Ser Met Leu Leu Gly Tyr Gly Leu Thr Met Val Pro Phe Gly Gly Glu

75

80

85

cag aac ccc atc tac tgg gcg cgg tac gct gac tgg ctg ttc acc acg 702

Gln Asn Pro Ile Tyr Trp Ala Arg Tyr Ala Asp Trp Leu Phe Thr Thr

90

95

100

ccg ctg ttg ttg tta gac ctc gcg ttg ctc gtt gac gcg gat cag gga 750

Pro Leu Leu Leu Leu Asp Leu Ala Leu Leu Val Asp Ala Asp Gln Gly

105

110

115

acg atc ctt gcg ctc gtc ggt gcc gac ggc atc atg atc ggg acc ggc 798

Thr Ile Leu Ala Leu Val Gly Ala Asp Gly Ile Met Ile Gly Thr Gly

120

125

130

135

ctg gtc ggc gca ctg acg aag gtc tac tcg tac cgc ttc gtg tgg tgg 846

Leu Val Gly Ala Leu Thr Lys Val Tyr Ser Tyr Arg Phe Val Trp Trp

140

145

150

gcg atc agc acc gca gcg atg ctg tac atc ctg tac gtg ctg ttc ttc 894

Ala Ile Ser Thr Ala Ala Met Leu Tyr Ile Leu Tyr Val Leu Phe Phe

155

160

165

ggg ttc acc tcg aag gcc gaa agc atg cgc ccc gag gtc gca tcc acg 942

Gly Phe Thr Ser Lys Ala Glu Ser Met Arg Pro Glu Val Ala Ser Thr

170

175

180

ttc aaa gta ctg cgt aac gtt acc gtt gtg ttg tgg tcc gcg tat ccc 990

Phe Lys Val Leu Arg Asn Val Thr Val Val Leu Trp Ser Ala Tyr Pro

185

190

195

gtc gtg tgg ctg atc ggc agc gaa ggt gcg gga atc gtg ccg ctg aac 1038

Val Val Trp Leu Ile Gly Ser Glu Gly Ala Gly Ile Val Pro Leu Asn

200

205

210

215

atc gag acg ctg ctg ttc atg gtg ctt gac gtg agc gcg aag gtc ggc 1086

Ile Glu Thr Leu Leu Phe Met Val Leu Asp Val Ser Ala Lys Val Gly

220

225

230

ttc ggg ctc atc ctc ctg cgc agt cgt gcg atc ttc ggc gaa gcc gaa 1134

Phe Gly Leu Ile Leu Leu Arg Ser Arg Ala Ile Phe Gly Glu Ala Glu

235

240

245

gcg ccg gag ccg tcc gcc ggc gac ggc gcg gcc gcg acc agc gac tga 1182

Ala Pro Glu Pro Ser Ala Gly Asp Gly Ala Ala Ala Thr Ser Asp

250

255

260

tcgcacacgc aggacagccc cacaaccggc gcggcttttc aacgacacac gatgagtccc 1242

ccactcggtc ttgtactcgc acgatcgcgc gacgacggcg acgccgacgg cgactttcca 1302

gcgtcgctca acaggctggc tgtcgtcgcg ctcgctggcg cggctctcgt cggtgcgcg 1362

ggctctgttcg ccgtgccgtt cctgcggtcg ttcggcatga cgttttggga agcgttcacc 1422

gttggttggtg tctccgagtt cgtctcggcc atcgtggcgg ccctcgcggg ctaccacctc 1482

tacaccacgc ccgacgacta gcagggcccg ctggcgagcc atcactcccg ctgtggcgag 1542

gcgacggccg ttctgtaccg ctaccgccgg cccggagtcc gggacatcgg cggggcgatg 1602

cgcatcgaac ggtcacccgg atcc 1626

<210> 2

<211> 262

<212> PRT

<213> Halobacterium salinarium

<400> 2

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1

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15

Ile Thr Gly Arg Pro Glu Trp Ile Trp Leu Ala Leu Gly Thr Ala Leu

20

25

30

Met Gly Leu Gly Thr Leu Tyr Phe Leu Val Lys Gly Met Gly Val Ser

35

40

45

Asp Pro Asp Ala Lys Lys Phe Tyr Ala Ile Thr Thr Leu Val Pro Ala

50

55

60

Ile Ala Phe Thr Met Tyr Leu Ser Met Leu Leu Gly Tyr Gly Leu Thr

65

70

75

80

Met Val Pro Phe Gly Gly Glu Gln Asn Pro Ile Tyr Trp Ala Arg Tyr

85

90

95

Ala Asp Trp Leu Phe Thr Thr Pro Leu Leu Leu Leu Asp Leu Ala Leu

100

105

110

Leu Val Asp Ala Asp Gln Gly Thr Ile Leu Ala Leu Val Gly Ala Asp

115

120

125

Gly Ile Met Ile Gly Thr Gly Leu Val Gly Ala Leu Thr Lys Val Tyr

130

135

140

Ser Tyr Arg Phe Val Trp Trp Ala Ile Ser Thr Ala Ala Met Leu Tyr

145

150

155

160

Ile Leu Tyr Val Leu Phe Phe Gly Phe Thr Ser Lys Ala Glu Ser Met

165

170

175

Arg Pro Glu Val Ala Ser Thr Phe Lys Val Leu Arg Asn Val Thr Val
180 185 190

Val Leu Trp Ser Ala Tyr Pro Val Val Trp Leu Ile Gly Ser Glu Gly
195 200 205

Ala Gly Ile Val Pro Leu Asn Ile Glu Thr Leu Leu Phe Met Val Leu
210 215 220

Asp Val Ser Ala Lys Val Gly Phe Gly Leu Ile Leu Leu Arg Ser Arg
225 230 235 240

Ala Ile Phe Gly Glu Ala Glu Ala Pro Glu Pro Ser Ala Gly Asp Gly
245 250 255

Ala Ala Ala Thr Ser Asp
260

<210> 3

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 3

cgcgatatcca gtcgtgtggc

20

<210> 4

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 4

cctcctgagg agtcgtgcga

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<210> 5

<211> 91

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 5

atcctgtacg tgctgttctt cgggttcacc gtcaaggagg cggcggcgca gcagcaggag 60

tcggcgacga cgcagaaggc ggagaaggag g

91

<210> 6

<211> 96

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 6

cgggatagcg ggaccacaac acaacggtaa cgttacgcag tactttgaac gtggatgcga 60

cctccatgcg cgtgacctcc ttctccgcct tctgcg

96

<210> 7

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 7

gtacatcctg tacgtgctgt tcttcg

26

<210> 8

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 8

acgacgggat acgcggacc

19

<210> 9

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 9

atcctgtacg tgctgttctt cg

22

<210> 10

<211> 15

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 10

cgggatacgc ggacc

15

<210> 11

<211> 83

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 11

atcctgtacg tgctgttctt cgggttcacc gcgcgctccc acacgcgcaa gatctccacg 60

ctccccgcgcg cgaacatgaa ggg

83

<210> 12

<211> 75

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 12

cgggatacgc ggaccacaac acaacggtaa cgttacgcag tactttgaac gtggatgcga 60

cgcccttcat gttcg

75

<210> 13

<211> 89

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 13

gggttcaccg aggtcttcta cctcatccgc aagcagctga caagaaggtc tccgcgtcct 60

ccggcgaccc gcagaagtac tacggcaag

89

<210> 14

<211> 90

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 14

cacaacggta acgttacgca gtactttgaa cgtggatgcg acggacttcg cgatcttgag 60

ctccttgccg tagtacttct gcgggtcgcc 90

<210> 15

<211> 84

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 15

gggttcaccg gccagctcgt cttcacggtc aaggaggcgg cggcgcagca gcaggagtcg 60

gcgacgacgc agaaggcgga gaag 84

<210> 16

<211> 90

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 16

ggaccacaac acaacggtaa cgttacgcag tactttgaac gtggatgcga cgcggctgac 60

ctccttctcc gccttctgcg tcgtcgccga

90

<210> 17

<211> 68

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 17

tttgatcatg tacatcctgt acgtgctgtt cttcgggttc acccagctcg tcttcacggt 60

caaggagg

68

<210> 18

<211> 100

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 18

gtggccgatc agccacacga ctggatacgc ggaccacaac acaacggtaa cgttacgcag 60

tactttgaac gtggatgcga ccatgcgcgt gacctccttc

100

<210> 19

<211> 74

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 19

tttgtacatg tacatcctgt acgtgctgtt cttcgggttc acctacggcc agctcgtctt 60

cacgggtcaag gagg

74

<210> 20

<211> 100

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 20

gctgccgatc agccacacga ctggatacgc ggaccacaac acaacggtaa cgttacgcag 60

tactttgaac gtggatgcga ccgtgacctc cttctccgcc

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<210> 21

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 21

gtacatcctg tacgtgctgt tcttcgggtt caccggc

37

<210> 22

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 22

atcctgtacg tgctgttctt cgggttcacc ggc

33

<210> 23

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 23

acgacgggat acgcggacca caacacaacg g

31

<210> 24

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 24

cgggatacgc ggaccacaac acaacgg

27

<210> 25

<211> 93

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer chimeric loop 3 sequence

<220>

<221> CDS

<222> (1)..(93)

<400> 25

acc cag ctc gtc ttc acg gtc aag gag gcg gcg gcg cag cag cag gag 48

Thr Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln Glu

1

5

10

15

tcg gcg acg acg cag aag gcg gag aag gag gtc acg cgc atg gtc 93

Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Met Val

20

25

30

<210> 26

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:chimeric loop 3

sequence

<400> 26

Thr Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln Glu

1

5

10

15

Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Met Val

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25

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<210> 27

<211> 93

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)..(93)

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer chimeric loop 3 sequence

<400> 27

acc tac ggc cag ctc gtc ttc acg gtc aag gag gcg gcg gcg cag cag 48

Thr Tyr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln

1 5 10 15

cag gag tcg gcg acg acg cag aag gcg gag aag gag gtc acg gtc 93

Gln Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Val

20 25 30

<210> 28

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:chimeric loop 3

sequence

<400> 28

Thr Tyr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln

1

5

10

15

Gln Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Val

20

25

30

<210> 29

<211> 99

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide

primer chimeric loop 3 sequence

<220>

<221> CDS

<222> (1)..(99)

<400> 29

acc tac ggc cag ctc gtc ttc acg gtc aag gag gcg gcg gcg cag cag 48

Thr Tyr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln

1

5

10

15

cag gag tcg gcg acg acg cag aag gcg gag aag gag gtc acg cgc atg 96

Gln Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Met

20

25

30

gtc

99

Val

<210> 30

<211> 33

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:chimeric loop 3
sequence

<400> 30

Thr Tyr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln

1

5

10

15

Gln Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Met

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Val

<210> 31

<211> 87

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)..(87)

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer chimeric loop 3 sequence

<400> 31

acc cag ctc gtc ttc acg gtc aag gag gcg gcg gcg cag cag cag gag 48

Thr Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln Glu

1

5

10

15

tcg gcg acg acg cag aag gcg gag aag gag gtc acg gtc 87

Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Val

20

25

<210> 32

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:chimeric loop 3

sequence

<400> 32

Thr Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln Glu

1

5

10

15

Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Val

20

25

<210> 33

<211> 96

<212> DNA

<213> Artificial Sequence

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<221> CDS

<222> (1)..(96)

<220>

<223> Description of Artificial Sequence:oligonucleotide

primer chimeric loop 3 sequence

<400> 33

acc ggc cag ctc gtc ttc acg gtc aag gag gcg gcg gcg cag cag cag 48

Thr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln

1

5

10

15

gag tcg gcg acg acg cag aag gcg gag aag gag gtc acg cgc atg gtc 96
 Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Met Val
 20 25 30

<210> 34

<211> 32

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:chimeric loop 3
 sequence

<400> 34

Thr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln
 1 5 10 15
 Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Met Val
 20 25 30

<210> 35

<211> 90

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)..(90)

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer chimeric loop 3 sequence

<400> 35

acc ggc cag ctc gtc ttc acg gtc aag gag gcg gcg gcg cag cag cag 48
Thr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln
1 5 10 15

gag tcg gcg acg acg cag aag gcg gag aag gag gtc acg gtc 90
Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Val
 20 25 30

<210> 36

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:chimeric loop 3
sequence

<400> 36

Thr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln
1 5 10 15

Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Val

20

25

30

<210> 37

<211> 96

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)..(96)

<220>

<223> Description of Artificial Sequence:oligonucleotide

primer chimeric loop 3 sequence

<400> 37

acc tac ggc cag ctc gtc ttc acg gtc aag gag gcg gcg gcg cag cag 48

Thr Tyr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln

1

5

10

15

cag gag tcg gcg acg acg cag aag gcg gag aag gag gtc acg cgc gtc 96

Gln Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Val

20

25

30

<210> 38

<211> 32

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:chimeric loop 3
sequence

<400> 38

Thr Tyr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln

1

5

10

15

Gln Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Val

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<210> 39

<211> 90

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)..(90)

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer chimeric loop 3 sequence

<400> 39

acc cag ctc gtc ttc acg gtc aag gag gcg gcg gcg cag cag cag gag 48

Thr Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln Glu

1

5

10

15

tcg gcg acg acg cag aag gcg gag aag gag gtc acg cgc gtc 90

Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Val

20

25

30

<210> 40

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:chimeric loop 3
sequence

<400> 40

Thr Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln Glu

1

5

10

15

Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Val

20

25

30

<210> 41

<211> 93

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)..(93)

<220>

<223> Description of Artificial Sequence:oligonucleotide

primer chimeric loop 3 sequence

<400> 41

acc ggc cag ctc gtc ttc acg gtc aag gag gcg gcg gcg cag cag cag 48

Thr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln

1

5

10

15

gag tcg gcg acg acg cag aag gcg gag aag gag gtc acg cgc gtc 93

Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Val

20

25

30

<210> 42

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:chimeric loop 3
sequence

<400> 42

Thr Gly Gln Leu Val Phe Thr Val Lys Glu Ala Ala Ala Gln Gln Gln
1 5 10 15

Glu Ser Ala Thr Thr Gln Lys Ala Glu Lys Glu Val Thr Arg Val
20 25 30

<210> 43

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: high affinity
analog

<400> 43

Val Leu Glu Asp Leu Lys Ser Cys Gly Leu Phe Gly
1 5 10

<210> 44

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:random peptide

<400> 44

Ser Ser Val Phe Leu Val Val Asp Arg Ser Arg

1

5

10

<210> 45

<211> 91

<212> DNA

<213> Halobacterium salinarium

<400> 45

cctgcagggt cgctggactc atccacctca gcattcaccc tgctctttgg tgtgctactc 60

gttctatgac accctcggac caatactggc t

91

<210> 46

<211> 266

<212> DNA

<213> human

<220>

<221> CDS

<222> (2) .. (265)

<400> 46

g tac atc ctg tac gtg ctg ttc ttc ggg ttc acc cgc gtc ttc cag gag 49

Tyr Ile Leu Tyr Val Leu Phe Phe Gly Phe Thr Arg Val Phe Gln Glu

1

5

10

15

gcg aag cgc cag ctc cag aag atc gac aag tcc gag ggc cgc ttc cac 97

Ala Lys Arg Gln Leu Gln Lys Ile Asp Lys Ser Glu Gly Arg Phe His

20

25

30

gtc cag aac ctc tcc cag gtc gag cag gac ggc cgc acc ggc cac ggc 145

Val Gln Asn Leu Ser Gln Val Glu Gln Asp Gly Arg Thr Gly His Gly

35

40

45

ctc cgc cgc tcc tcc aag ttc tgc ctc aag gag cac aag gcg ctc aag 193

Leu Arg Arg Ser Ser Lys Phe Cys Leu Lys Glu His Lys Ala Leu Lys

50

55

60

acc ctc gag gtc gca tcc acg ttc aaa gta ctg cgt aac gtt acc gtt 241

Thr Leu Glu Val Ala Ser Thr Phe Lys Val Leu Arg Asn Val Thr Val

65

70

75

80

gtg ttg tgg tcc gcg tat ccc tcg t

266

Val Leu Trp Ser Ala Tyr Pro Ser

85

<210> 47

<211> 88

<212> PRT

<213> human

<400> 47

Tyr Ile Leu Tyr Val Leu Phe Phe Gly Phe Thr Arg Val Phe Gln Glu

1

5

10

15

Ala Lys Arg Gln Leu Gln Lys Ile Asp Lys Ser Glu Gly Arg Phe His

20

25

30

Val Gln Asn Leu Ser Gln Val Glu Gln Asp Gly Arg Thr Gly His Gly

35

40

45

Leu Arg Arg Ser Ser Lys Phe Cys Leu Lys Glu His Lys Ala Leu Lys

50

55

60

Thr Leu Glu Val Ala Ser Thr Phe Lys Val Leu Arg Asn Val Thr Val

65

70

75

80

Val Leu Trp Ser Ala Tyr Pro Ser

85

<210> 48

<211> 90

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

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gcggaggccg tggccggtgc ggccgtcctg 90

<210> 49

<211> 89

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

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tcgaggggtct tgagcgcctt gtgctcctt 89

<210> 50

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 50

tgtacatgta catcctgtac gtgc

24

<210> 51

<211> 90

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 51

atcctgtacg tgctgttctt cgggttcacc cgcgtcttcc aggaggcgaa gcgccagctc 60

cagaagatcg acaagtccga gggccgcttc

90

<210> 52

<211> 90

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 52

aagcgccagc tccagaagat cgacaagtcc gagggccgct tccacgtcca gaacctctcc 60

caggtcgagc aggacggccg caccggccac

90

<210> 53

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:oligonucleotide
primer

<400> 53

gctgccgatc agccacacga ctggatacgc ggacc

35